UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA
"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES"

05-06 November 2026



Anencephaly in a Bulldog Puppy: A Case Report

Anca-Alexandra Tămaș[1], Bianca-Cristina Cuzminschi[1], Ioana-Irina Spătaru[1], Iuliu Torda[1], Bogdan Alexandru Sicoe[1], Simona Marc[1*], Gabriel Otavă[1]

[1]*Faculty of Veterinary Medicine, University of Life Science "King Mihai I" Timisoara, Calea Aradului 119, 300645, Timisoara, Romania*

[*]Correspondence: *simona.marc@usvt.ro*

Abstract: *Anencephaly is a severe congenital malformation of the central nervous system characterized by partial or complete absence of the cranial vault and major brain structures, resulting from abnormal neural tube development during embryogenesis. This report describes an affected male English Bulldog puppy from a litter of nine delivered by emergency caesarean section following dystocia. Post-mortem computed tomography (CT) revealed absence of the parietal and occipital bones and spina bifida. Subsequent necropsy identified a severe cranial defect with exposed, protruding encephalic tissue and an associated cleft palate. The concurrent cranial, spinal, and orofacial abnormalities represent a complex congenital phenotype. This case highlights the complementary diagnostic value of CT and post-mortem examination in characterizing congenital malformations.*

Introduction

- Anencephaly is a severe congenital neural tube defect resulting from abnormal cranial neurulation, characterized by partial or extensive absence of the cranial vault and brain structures. Although rarely reported in dogs, it may occur alongside other congenital abnormalities, including spina bifida and cleft palate (1, 3, 5). Its etiology remains incompletely understood, with genetic, nutritional, and environmental factors considered potential contributors. Congenital malformations have also been documented in brachycephalic breeds (2). This report describes the CT and post-mortem findings of an English Bulldog puppy affected by anencephaly and associated congenital malformations.

Case History

- A 5-year-old English Bulldog bitch with two previous parturitions presented with dystocia and underwent emergency caesarean section. Nine puppies were delivered (six females and three males). Two males died; one showed severe cranial malformation and cleft palate (Fig. 1). The affected puppy underwent post-mortem CT , followed by necropsy exam.



Fig. 1. Absence of the parietal bone (yellow arrow) and occipital bone (red arrow).

Results and discussions

- Post-mortem computed tomography (CT) revealed severe cranial skeletal abnormalities, characterized by the absence of the parietal and occipital bones (Fig. 1), associated with cervical spina bifida occulta (Fig. 2).

- Macroscopic examination of the affected puppy revealed a pronounced defect of the cranial vault, with exposed encephalic tissue protruding externally through the cranial opening. The exteriorized tissue exhibited a reddish, markedly congested appearance, with an irregular shape and surface (Fig. 3).

- Further examination of the oral cavity identified a cleft palate (Fig. 4), representing an additional orofacial congenital malformation. Gross post-mortem examination also revealed a generalized hemorrhagic appearance of the internal organs. The combined imaging and macroscopic findings supported the diagnosis of anencephaly associated with spinal and orofacial congenital abnormalities.



Fig. 2. External morphology of the affected puppy and CT findings of cervical spina bifida (green arrow).

- The association of cranial, spinal, and orofacial malformations observed in this case is comparable to congenital abnormalities previously reported in canine and feline cases (2, 4, 5) . Although genetic, nutritional, and environmental factors may contribute to neural tube defects, the underlying etiology remains undetermined, and a common developmental mechanism cannot be established.

- The complementary use of CT and post-mortem examination provided a comprehensive morphological assessment, highlighting the importance of an integrated diagnostic approach in complex congenital malformations.



Fig. 3 Cranial defect with exposed, congested encephalic tissue.



Fig. 4 Cleft palate observed during post-mortem examination.

Conclusions

- This case highlights the coexistence of multiple congenital malformations in an English Bulldog puppy, emphasizing the importance of a comprehensive morphological assessment. The combined use of CT and post-mortem examination provided complementary diagnostic information, contributing to the characterization of complex neural tube defects in dogs.

References

1.Estevam MV, Beretta S, Smargiassi NF, et al. Congenital malformations in brachycephalic dogs: A retrospective study. *Front Vet Sci.* 2022;9:981923. doi:10.3389/fvets.2022.981923

2.Estevam MV, Beretta S, Smargiassi NF, et al. Anencephaly and palatoschisis in 2 newborn puppies. *Can Vet J.* 2025;66(6):628–634.

3.Huisinga M, Reinacher M, Nagel S, Herden C. Anencephaly in a German shepherd dog. *Vet Pathol.* 2010;47(5):948–951. doi:10.1177/0300985810371306

4.Marc S, Savici J, Sicoe B, et al. Exencephaly-Anencephaly Sequence Associated with Maxillary Brachygnathia, Spinal Defects, and Palatoschisis in a Male Domestic Cat. *Animals.* 2023;13(24):3882. doi:10.3390/ani13243882

5.Santos Luz M, de Mello Bobány D, Monteiro Silva ME, Moura Carvalho CF. Anencephaly associated with cleft palate in a Bull Terrier litter: case report. *IOSR J Agric Vet Sci.* 2016;9(9):18–20. doi:10.9790/2380-0909021820